



User's Manual

**Intel *i945P* / *i945PL* mainboard
for Intel Socket 775 processor**

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HANDLING PROCEDURES:

Static electricity can severely damage your equipment. Handle the mainboard and any other device in your system with extreme care and avoid unnecessary contact with system components on the mainboard. Always work on an antistatic surface to avoid possible damage to the mainboard from static discharge. Always have the power supply unplugged and powered off when inserting and removing devices within the computer chassis. The Manufacturer assumes no responsibility for any damage to the mainboard that results from failure to follow instruction or failure to observe safety precautions.



CAUTION



The mainboard is subject to damage by static electricity. Always observe the handling procedures.

Post Post Frequently Asked Questions

Below is a list of some basic POST Codes, possible problems and solutions. For more detailed information about POST Codes, refer to Appendix in this manual.

POST CODE	Problem	Solution
FFh or CFh	<ol style="list-style-type: none">1. BIOS chip inserted incorrectly2. Incorrect BIOS update version3. Mainboard problem4. Add-on card inserted incorrectly.	<ol style="list-style-type: none">1. Reinsert the BIOS chip2. Download the correct BIOS version update from the manufacturer's Web site.3. Replace mainboard4. Remove and replace the add-on card
C1h - C5h	<ol style="list-style-type: none">1. Memory module inserted incorrectly2. Memory compatibility problem3. Memory module damaged	<ol style="list-style-type: none">1. Reinsert memory module2. Replace memory with correct type3. Replace memory module
2Dh	<ol style="list-style-type: none">1. Error occurred in VGA BIOS2. VGA card inserted incorrectly	<ol style="list-style-type: none">1. Replace VGA card2. Reinsert the VGA card
26h	Overclock error	Clear CMOS or press the insert key to power on the system
07h - 12h	<ol style="list-style-type: none">1. Initial Keyboard controller error2. RTC error	<ol style="list-style-type: none">1. Ensure that the keyboard and mouse are connected correctly.2. Replace the RTC battery.

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Section 1

INTRODUCTION

1-1 Package Contents

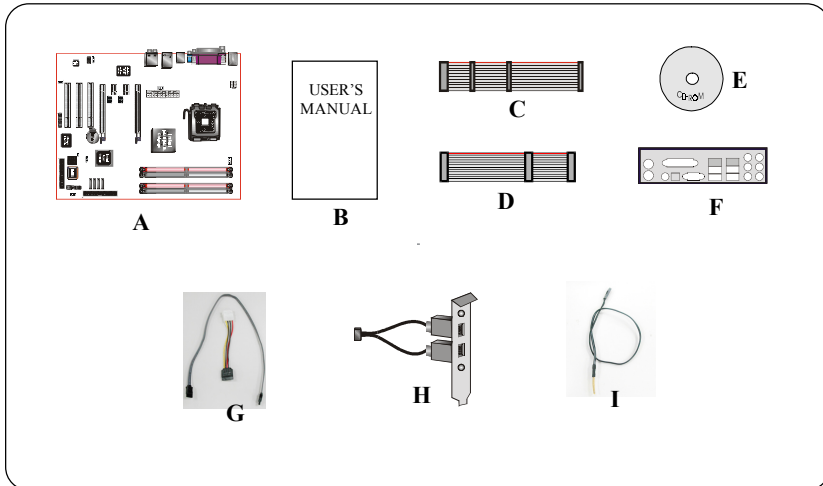
Contents

- A. Mainboard
- B. User's manual
- C. Floppy drive cable
- D. HDD drive cable
- E. CD (drivers and utilities)
- F. I/O Shield
- G. S-ATA II data and power cable

Optional Items

- H. Extra USB2.0 port cable
- I. ThermoStick cable

If you need the optional item, please contact your dealer for assistance.



1-2 Mainboard Features

Brief Introduction

★ **Intel® Pentium® 4 processors**

The Pentium 4 processor is designed to deliver performance across applications and usages where end-users can truly appreciate and experience the performance. The Pentium 4 processor delivers this world-class performance for consumer enthusiasts and business professional desktop PC users as well as for entry-level workstation users.

Intel Dual-Core processor provides two execution cores in one physical processor allowing the platform to do more in less time while enjoying smooth interaction with your PC.

Intel adds support for Hyper-Threading Technology to the Pentium 4 processor family. HT Technology allows a single, physical Pentium 4 processor to function as two logical processor for next generation multi threaded application.

For more information about all the new features the Pentium 4 delivers, check out the Intel website at <http://www.intel.com>

★ **Chipset**

This board is designed with either Intel® 945P (Lakeport-P) or Intel® 945PL (Lakeport-PL) chipset. The Intel® 945P/945PL chipset consists of the Memory Controller Hub (MCH) and the I/O Controller Hub (ICH7).

★ **DDR2**

DDR2 ushers in the new era of DDR memory technology. DDR2 memory offers faster speed, higher data bandwidth and lower power consumption over DDR.

★ **PCI-Express (PCI-E)**

Next generation peripheral interface to succeed to current PCI bus for the next decade. With smaller slot size and 250MB/sec(PCI-E*1) or 4GB/sec(PCI-E*16) maximum transfer, PCI-Express overcomes PCI bus bottleneck.

★ **Jumper Configurable PCI-Express**

This mainboard is cleverly designed with a jumper configurable PCI-Express slot that lets user select the bandwidth required. This allows high speed PCI-E devices such as RAID controller or VGA cards to be supported on this mainboard.

★ **Ultra ATA100**

The mainboard provides an Ultra ATA100 Bus Master IDE controller. This controller supports Ultra ATA100 protocols which are ideal to support demanding applications such as real-time video, multimedia, and a high performance operating system. A new IDE cable is required for Ultra ATA100.

★ **Hardware Monitoring**

Hardware monitoring enables you to monitor various aspects of the system operation and status. This includes CPU temperature, voltage and fan speed in RPMs.

★ **10/100 LAN (Optional)**

This mainboard is mounted with a 10/100BASE-T Ethernet LAN controller. It allows the mainboard to connect to a local area network by means of a network hub.

★ **GbE LAN (Optional)**

This mainboard is mounted with the new Gigabit Ethernet LAN which allows data transmission at 1,000 megabits per second (Mbps), running at 10 times faster than conventional 10/100BASE-T Ethernet LANs.

★ **Serial ATA II**

S-ATA II is the second generation SATA interface with double the transferring speed up to 300MB/sec. It supports NCQ to provide faster reading speed for your storage devices.

★ **USB2.0**

A popular USB standard for plugging in peripherals with up to 480Mbps transfer speed while maintaining backward compatibility with older USB1.1 device.

★ **8ch**

Delivers 8 channel audio to bring you the latest in audio realism from DVD movies and games. Perfect for your home theatre system.

Special Features

BIOS Features:

Magic Health

Reports your system hardware status for every boot-up to help detect faults early. Monitor hardware status including CPU temperature, CPU/Memory/ Chipset voltage, fan RPM speed for chassis fan, CPU fan & Power supply fan.

EZ-Boot

Simply press “ESC” to select your bootable device. No more hassle to search the BIOS menu, change and re-start.

PowerBIOS

Supporting a full range of overclocking setting via BIOS. Various adjustable feature include FSB/Chipset/Memory voltage tweaking.

H/W Features:

Post Port

An onboard LED-display trouble-shooting device, facilitating user to detect boot-up problems.

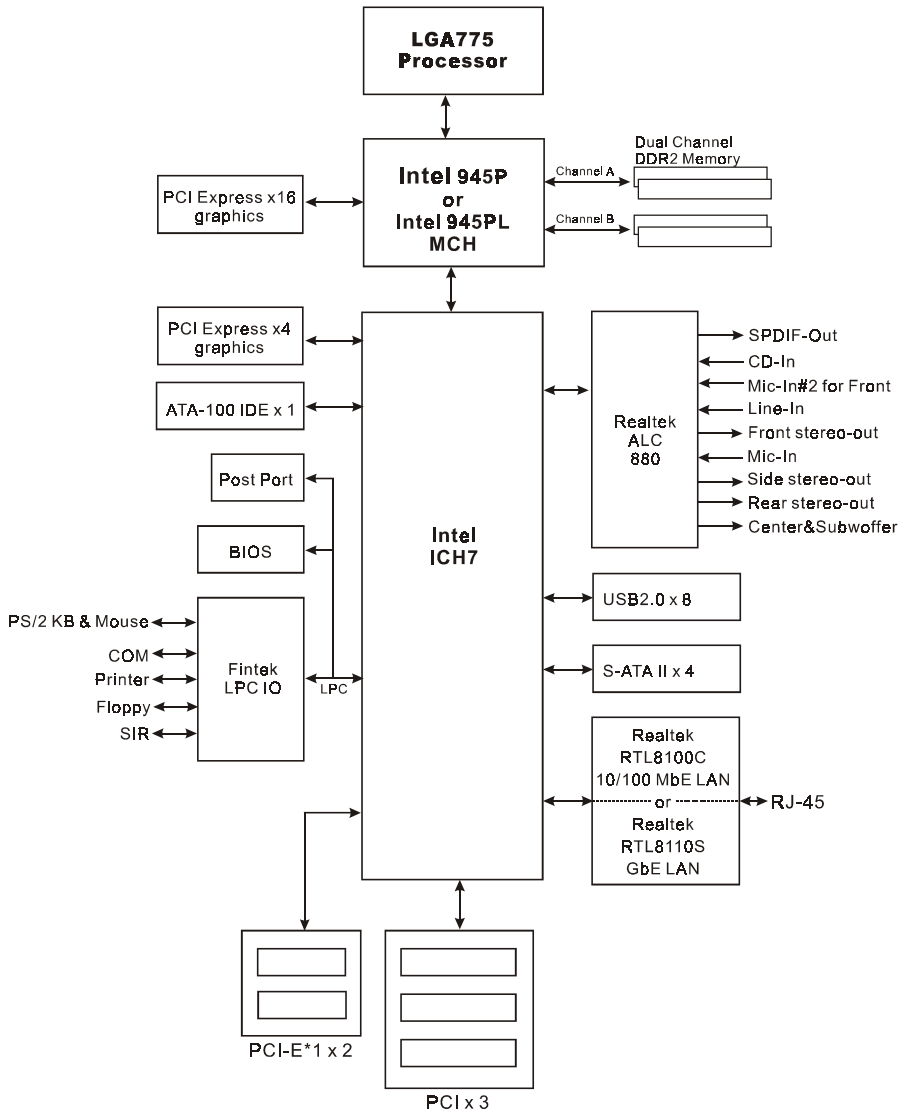
QuickSPDIF

On board SPDIF-out connector for quick connection to multi-channel speakers. Not only removes cable cluttering but also delivers loss-free digital audio to let you enjoy DVD movies and games with crystal clear sound.

Thermo Stick (Optional)

Flexible thermometer to let you measure any temperature by software. Ideal for monitoring VGA card, chipset or even disk drives temperatures. Refer to page 3-15 for details.

1-3 System Block Diagram



Section 2

SPECIFICATION

Mainboard Specification

● **Processor**

- ◆ Socket LGA775 for Intel® Celeron D® 3xx series, Intel® Pentium 4® 5xx/6xx series, P4EE up to 3.8+GHz
- ◆ Support 533/800/1066MHz front-side bus (533/800MHz FSB for i945PL chipset)
- ◆ Support Intel Pentium D® with Dual core processor
- ◆ Support Intel® EM64T 64-bit computing platform
- ◆ Support Intel 05B or 05A Platform Compatibility Guide

● **Chipset**

- ◆ Intel® i945P or i945PL + ICH7

● **Main Memory**

- ◆ Four 240-pin DDR2 SDRAM DIMM sockets
- ◆ Support 1.8v DDR2-400/533/667 DIMMs with dual channel architecture (DDR2-400/533 for i945PL chipset)
- ◆ Support single-sided or double-sided, non-ECC, DIMMs with 256Mb/512Mb/1Gb devices
- ◆ Supports up to 4GB memory size for i945P chipset (2GB memory size for i945PL chipset)

● **Expansion Slots**

- ◆ Three PCI connectors compliant with PCI v2.3
- ◆ Two PCI-E (x1) connectors compliant with PCI Express 1.0a (Jumper selectable)
- ◆ One PCI-E (x16) connectors compliant with PCI Express 1.0a
- ◆ One PCI Express (x4) connector for extra PCI-E VGA in GLI (Graphics Link Interface) mode (Jumper selectable)

Specification

● IDE

- ◆ One IDE interface (up to 2 IDE devices) with UDMA-33, ATA-66/100 support from embedded IDE controller

● USB

- ◆ Eight USB connectors compliant with USB2.0 from embedded USB controller (4 connectors at rear panel)

● S-ATA II

- ◆ Four S-ATA II ports with up to 300MB/s bandwidth from ICH7

● LAN

- ◆ One Gb Ethernet from Realtek RTL8110 PCI controller, or
One 10/100 Ethernet from Realtek RTL8100C PCI controller

● Audio

- ◆ Selectable 2, 6 or 8-CH audio from ALC880 Azalia compliant CODEC with 20-bit ADC and 24-bit DAC
 - Support CD-In
 - Coaxial S/PDIF-out available on rear panel
 - Support Jack detection for fool-proof audio device installation
 - Rear panel audio jacks configuration:

Audio Jack Color	2 channel	6 channel	8 channel
Light Blue	Line-in	Line-in	Line-in
Lime	Line-out	Front stereo-out	Front stereo-out
Pink	Mic-in	Mic-in	Mic-in
Gray			Side stereo-out
Black		Rear stereo-out	Rear stereo-out
Orange		Center&Subwoofer	Center&Subwoofer

● I/O

- ◆ Onboard Fintek LPC bus I/O controller
- ◆ Legacy peripheral interface for PS/2 keyboard & mouse, FDD, Parallel, Serial, and IrDA (v1.0 compliant)
- ◆ Support Hardware Monitoring for fan speed monitoring, CPU/System temperature and ThermoStick temperature.
- ◆ Intelligent fan speed control for CPU-fan (PWM)for quiet operation

● **BIOS**

- ◆ Flash EEPROM with Award Plug&Play BIOS
- ◆ Support ACPI S3 (Suspend To RAM) mode in ACPI compliant O/S
- ◆ Support EZ Boot for fast bootable device selection
- ◆ Support Magic Health for system hardware status report during system boot-up

● **Peripheral Interfaces**

☞ **At Rear Panel**

- ◆ PS/2 keyboard and mouse ports
- ◆ One Parallel (printer) port
- ◆ One S/PDIF-Out Coaxial jack
- ◆ One Serial port
- ◆ One RJ45 LAN connector
- ◆ Four USB2.0 ports
- ◆ Six Audio jacks

☞ **Onboard connector and pin-header**

- ◆ One floppy drive connector
- ◆ One ATA-100 IDE connector
- ◆ Four extra USB2.0 ports
- ◆ One CD-IN connector
- ◆ One IR connector
- ◆ Four S-ATA II connectors
- ◆ Three Fan connectors

● **Front Panel Controller**

- ◆ Supports Reset & Soft-Off switches
- ◆ Supports HDD & Power LEDs
- ◆ Supports PC speaker
- ◆ Supports Front Panel Audio connector

Specification

● **Special Features**

- ◆ Support KBPO function – Keyboard power on, turn on the computer from keyboard
- ◆ Support Wake-On-LAN by PME
- ◆ Support USB resume in S3
- ◆ Onboard Post Port LED display for system debugging
- ◆ Support Asynchronous clocking mode between FSB and PCI/PCI-E
- ◆ PowerBIOS for excellent overclocking features:
 - Programmable FSB and PCI Clock output frequency with 1MHz fine tuning
 - Support BIOS adjustable CPU multiplier, FSB clock, PCI-E x16 clock, DIMM frequency
 - Support BIOS adjustable CPU Core voltage, Chipset voltage and DIMM voltage

● **Form Factor**

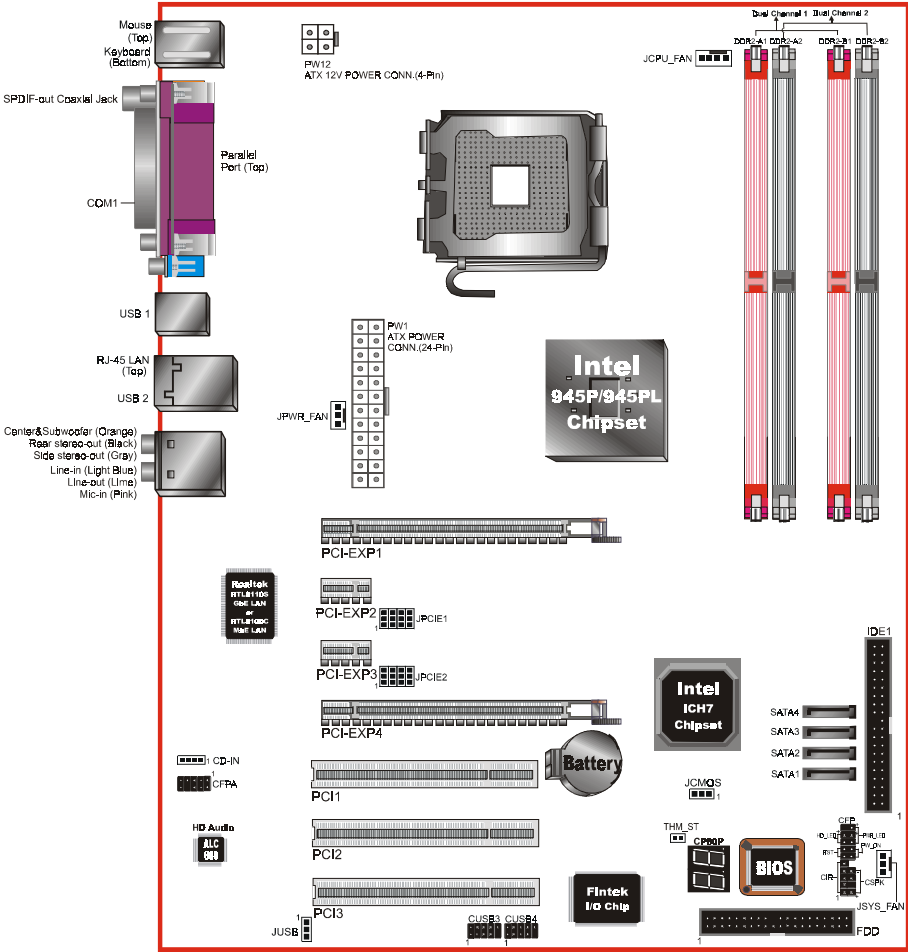
- ◆ 305mm x 245 mm ATX size

● **Supported Operating System**

- ◆ Windows 2000, Windows XP

Section 3 INSTALLATION

Mainboard Layout



Note: Depending on the model you purchased, some components are optional and may not be available.

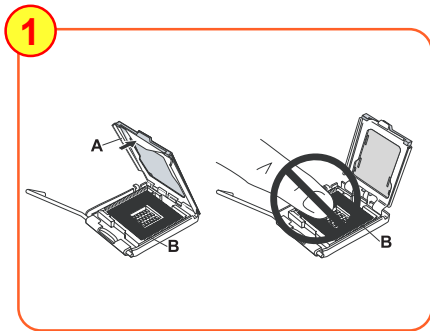
Installation

Easy Installation Procedure

The following must be completed before powering on your new system:

- 3-1. CPU Installation
- 3-2. Jumper Settings
- 3-3. System Memory
- 3-4. VGA card installation
- 3-5. Device Connectors

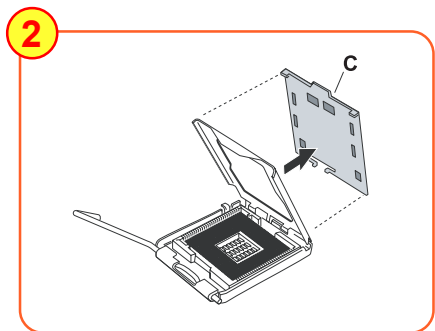
3-1 CPU Installation



<Figure 1>

Step 1

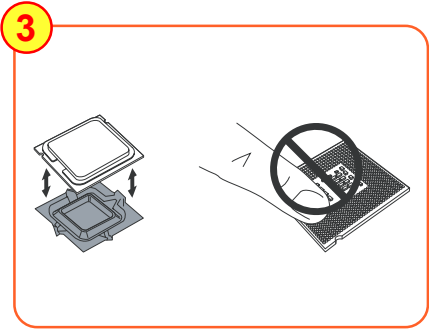
Open load plate (A), DO NOT touch socket contacts (B).



<Figure 2>

Step 2

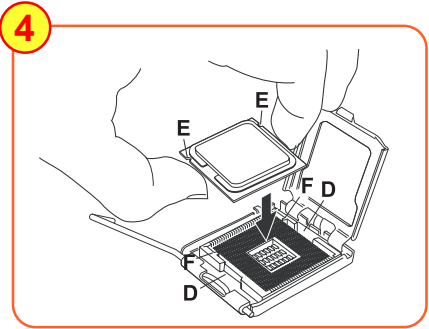
Remove protective cover (C) from load plate. Please do not discard the protective cover. Always replace the protective cover if the processor is removed from the socket.



<Figure 3>

Step 3


Remove the processor from the protective cover. Do not touch the bottom of the processor. The processor cover should not be discarded. Always replace the processor cover if the processor is removed from the socket.

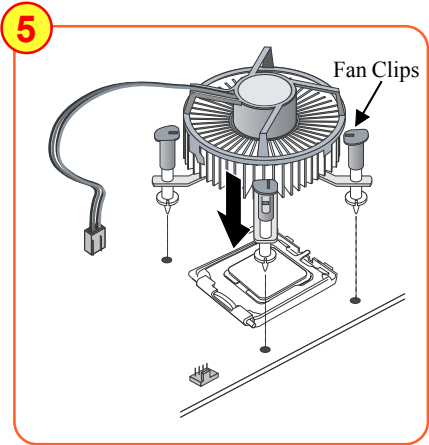


<Figure 4>

Step 4

Hold the processor with thumb and index fingers as shown. Ensure fingers align to the socket cutouts (D) , processor notches (E) align to socket convexes (F). Place the processor straight down without tilting or sliding in the socket.

 The CPU is keyed to prevent incorrect insertion, do not force the CPU into the socket. If it does not go in easily, check for mis-orientation.

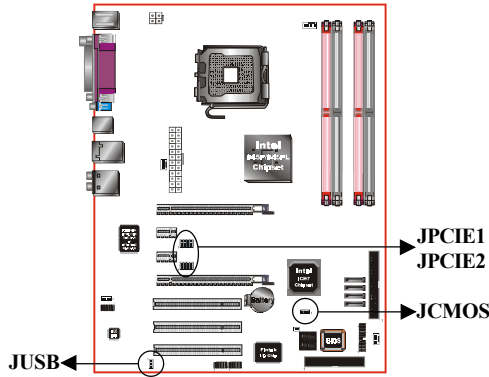


<Figure 5>

Step 5

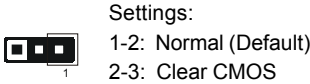
Place the fan heatsink onto the mainboard with the fasteners align to the holes. Be care not to damage the thermal interface material attached to the bottom of the heatsink. Rotate the clips 90 degrees to lock the CPU cooler in place. Connect the fan cable to the mainboard header JCPU_FAN.

3-2 Jumper Settings

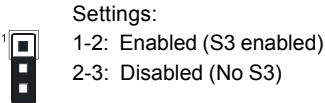


JCMOS: Clear CMOS data Jumper
If the CMOS data becomes corrupted or you forgot the supervisor or user password, clear the CMOS data to reconfigure the system back to the default values stored in the ROM BIOS.

- To CMOS Clear data, please follow the steps below.
1. Turn off the system.
 2. Change the jumper from “1-2” to “2-3” position for a few seconds.
 3. Replace the jumper back to the “1-2” position.
 4. Turn on the system and hold down the key to enter BIOS setup.

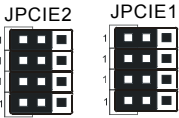
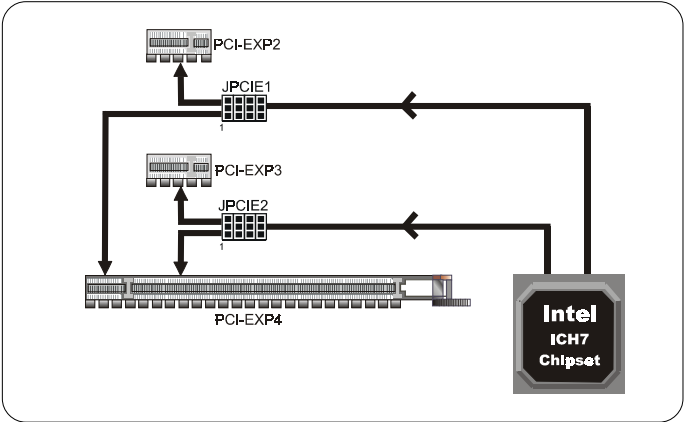


JUSB: USB S3 Wake up Jumper
This jumper disconnects 5V standby voltage to USB devices. This means USB devices will not be able to wake-up the system from S3 (Suspend to RAM) power saving mode.



JPCIE1~JPCIE2:PCI-E slot Control Jumper

These jumpers redirect the PCI-E signals from PCI-EXP2 and PCI-EXP3 to the PCI-EXP4 connector. This allows 4x bandwidth on PCI-EXP4 slot to cater for higher bandwidth cards such as VGA and RAID connectors.




- Settings:
- 1-2: PCI-E x4 mode (Default)
 - 2-3: PCI-E x1 mode

Set both jumpers to 1-2 to use PCI-EXP4 as high bandwidth PCI-E x4 slot.
Set both jumpers to 2-3 to use PCI-EXP2 and PCI-EXP3 slots.

Supported Configuration:

JPCIE1/JPCIE2 Settings	PCI-EXP4	PCI-EXP2	PCI-EXP3
1-2	x4	O	O
2-3	x1	x1	x1

 Jumpers JPCIE1 and JPCIE2 must always be set to the same mode.

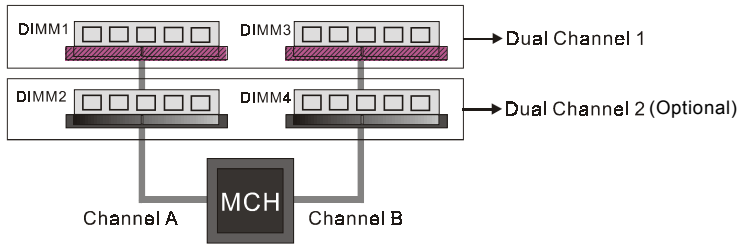
3-3 System Memory Configuration

The mainboard accommodates four 240-pin DDR2 DIMM sockets.

- Supports up to 4GB of 400/533/667MHz DDR2 SDRAM (2GB and 400/533MHz for i945PL chipset support only).
- Supports dual channel memory interface.
- Supports non-ECC memory and non-Registered DIMMs only.
- SPD (Serial Presence Detect) scheme for DIMM detection support.
- Supports configurations defined in the JEDEC DDR2 DIMM specification only.

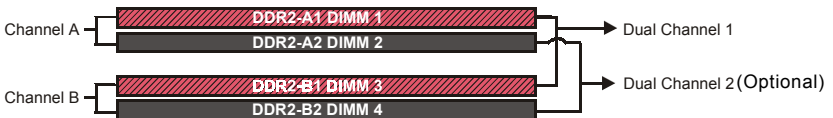
Dual Channel interface:

- Dual channel memory access offers increased system performance.
<Figure 6> shows the logical memory layout for channel A and channel B.
- For dual channel to operate, both channel must be populated with same amount of memory, preferably of the same type.



<Figure 6>

- The four DIMM sockets are divided into two colors to help you identify the channel pairs <Figure 7>. Each dual channel pair has the same color, e.g. DIMM1 and DIMM3. **To obtain best performance, simply mount DIMM sockets of the same color.**



<Figure 7>

Memory configurations supported:

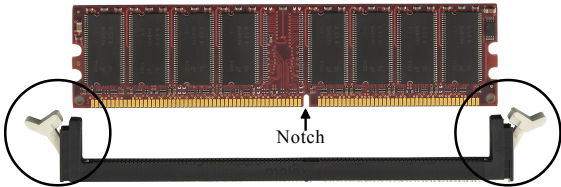
	1 DIMM (64-bit)				2 DIMM (128-bit)				(Optional) 3 DIMM (128-bit)		4 DIMM (128-bit)
DIMM#1	SS/DS				SS/DS			SS/DS	SS/DS	SS/DS	SS/DS
DIMM#2		SS/DS				SS/DS	SS/DS		SS/DS	SS/DS	SS/DS
DIMM#3			SS/DS		SS/DS		SS/DS		SS/DS		SS/DS
DIMM#4				SS/DS		SS/DS		SS/DS		SS/DS	SS/DS

* SS: Single-Sided DIMM, DS: Double-Sided DIMM

Note: Using non-compliant memory with higher bus speeds (overclocking) may severely compromise the integrity of the system.

Memory Installation :

- ① To install, align the notch on the DIMM module with the connector.
- ② Press straight down as shown in the figure below until the white clips close and the module fits tightly into the DIMM socket.

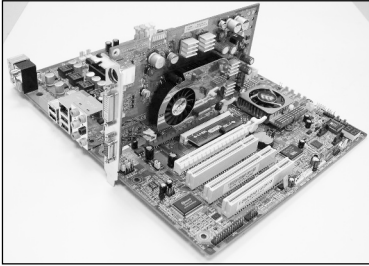


<Figure 8>

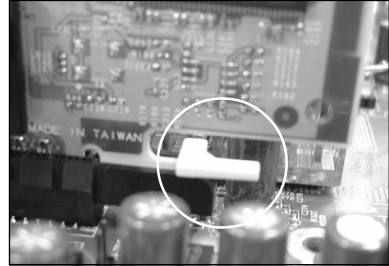
3-4 VGA Card Installation

Single VGA card Installation

- ◆ To install a single VGA card in Single Mode, insert the VGA into the "PCI-EXP1" VGA slot. (labeled on the board)
- ◆ When installing the VGA card, make sure the card edge connector is fully inserted into the slot and the clicker is locked properly.



<Figure 9>

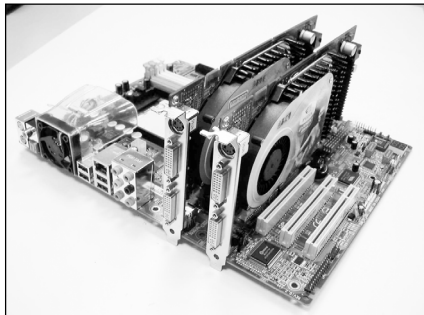


<Figure 10>

Dual VGA card Installation - GLI mode:(Graphics Link Interface)

The mainboard is equipped with a secondary PCI-E VGA slot to support GLI mode technology. GLI mode allows two PCI-Express VGA cards to be installed on the same mainboard to let you enjoy dual display experience. With this technology you can now expand your desktop space across two monitors or have independent display on each monitor.


- ◆ Ensure jumpers JPCIE1 and JPCIE2 are set to PCI-E x4 mode as described in page 3-5.
- ◆ To install dual VGA card, insert both cards into PCI-E slots "PCI-EXP1" and "PCI-EXP4". Ensure the cards are secured properly using the clicker.



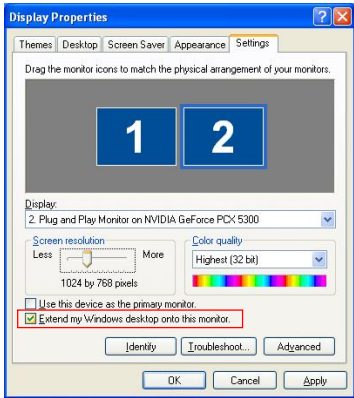
<Figure 11>

- ◆ “PCI-EXP4” VGA slot operates at PCI-E x4 bandwidth, the following table of VGA cards have been tested compatible with this slot.

PCI-E VGA Card	
nVidia Geforce	ASUS GeForce 6600GT 128MB
	ASUS GeForce 6600TD 128MB
	ASUS GeForce 6200TD 128MB
	MSI Geforce 6200TC 64MB
	Prolink GeForce 6600GT 128MB
	Prolink Geforce 6800 Ultra 256MB
	Leadtek Geforce PCX5750 128MB
	Leadtek Geforce PCX5900 128MB
	Leadtek GeForce 6600GT 128MB
	Sparkle SP-PX430DH GeForce 6600LE 128MB
	Sparkle SP-PX43GDH GeForce 6600GT 128MB
	Technology GeForce 6200TD 128MB
	EPoX GeForce 6600GT 128MB
ATI	EPoX Radeon X300 64bit 128MB
	EPoX Radeon X300 128bit 128MB
	EPoX Radeon X800 256MB
	ELSA FALCOX X60XT DTV Radeon X600 128MB
	Gigabyte GV-RV 70P128D Radeon X700 128MB

 Please refer to the manufacturer's website for updated list of compatible VGA cards.

- ◆ To set up dual monitor display in Windows environment, right click on the desktop and select Properties. Select the Settings tab to display the window below.

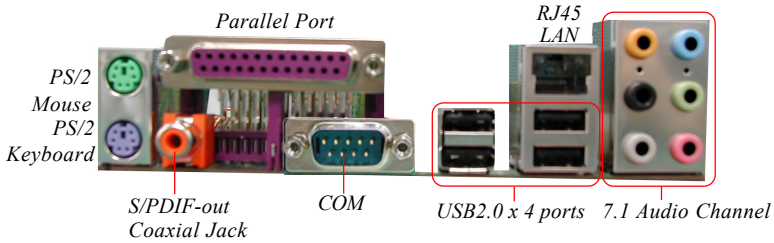


<Figure 12>

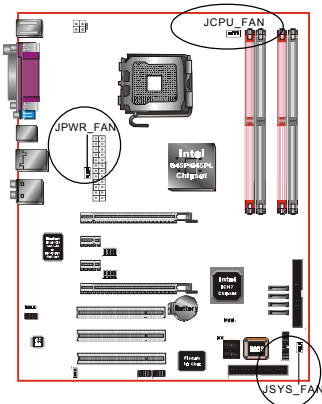
- ◆ Tick the checkbox "Extend my windows Desktop onto this monitor" and click "Apply". Dual display is now enabled.

3-5 Device Connectors

The I/O back panel for this mainboard is shown below. When installing the mainboard into the computer case, use the bundled I/O shield to protect this back panel.



<Figure 13> - I/O Ports



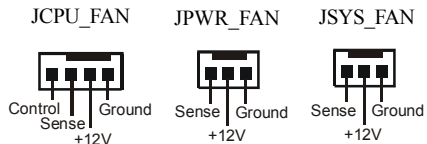
JCPU_FAN / JPWR_FAN / JSYS_FAN:

CPU/Power/Chassis Fan Power Connectors

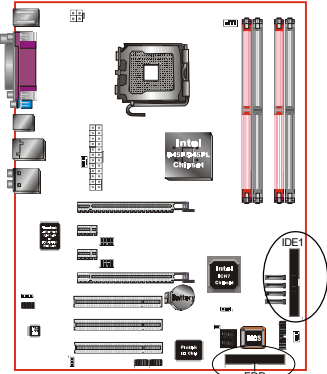
JCPU_FAN: The CPU must be kept cool by using a heatsink with fan assembly.

JPWR_FAN: If you are installing an additional fan in the unit, connect to this fan connector.

JSYS_FAN: The chassis fan will provide adequate airflow throughout the chassis to prevent overheating the CPU.



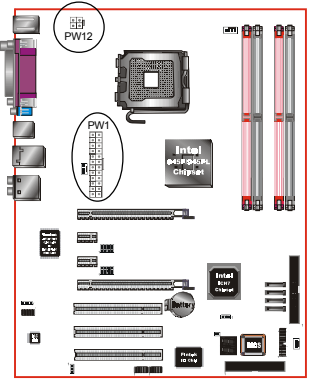
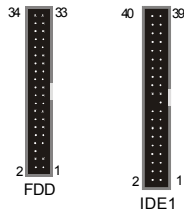
This mainboard is equipped with intelligent fan speed control. Refer to the PC Health Status submenu of the BIOS.



FDD: Floppy Controller Connector
This connects to the floppy disk drive.

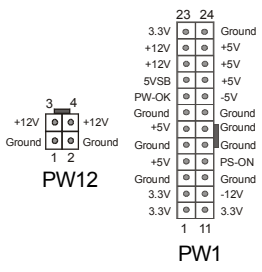
IDE1: ATA-66/100 IDE Connector
This mainboard is equipped with 1 IDE connectors to support up to 2 ATA-100 IDE drives. It supports PIO and DMA mode operations for maximum data transfer rate of 100MB/sec per channel.

When using two IDE drives on the same connector, one must be set to Master mode and the other to Slave mode. Refer to your disk drive user's manual for details.



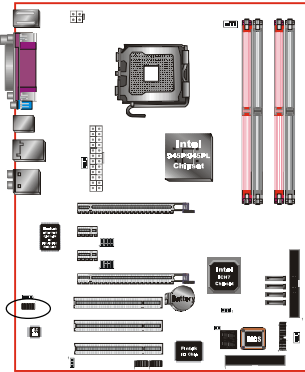
PW1: 24-pin ATX Power Connector
PW12: 4-pin ATX12V Power Connector
The mainboard is equipped with a standard 24-pin ATX main power connector and a 4-pin +12V power connector for connecting an ATX12V power supply. The plugs of the power cables are designed to fit in only one orientation. Insert the plugs into the connectors until they fit in place.

Caution:
The PW1 and PW12 Power Connector must be used simultaneously.



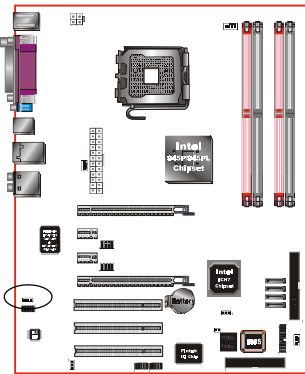
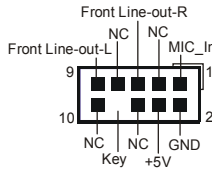
The board requires a minimum of 400 Watt power supply to operate. Your system configuration (amount of memory, add-in cards, peripherals, etc.) may exceed this minimum power requirement. To ensure adequate power, for GLI mode use a 550 Watt or greater power supply.

Installation



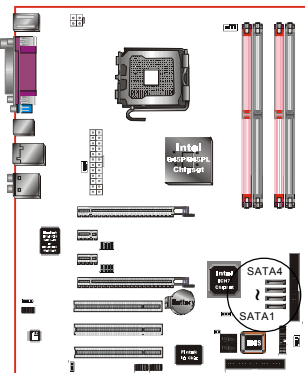
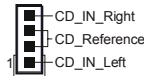
CFPA: Front Panel Audio Connector

This audio connector connects to the audio jacks located on the front panel. Refer to your case manual to match the pin-out names.



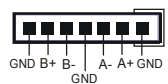
CD-IN: CD Audio_IN Connector

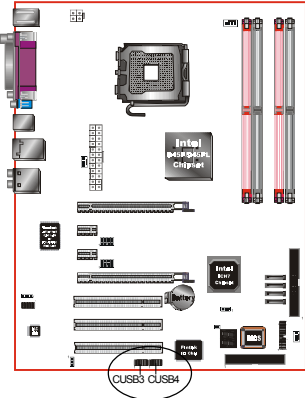
The CD-IN connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.



SATA1 ~ SATA4: Four S-ATA II Connectors

These connectors enable you to connect Serial ATA HDDs or optical drives type.

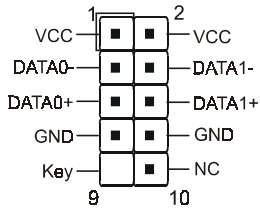




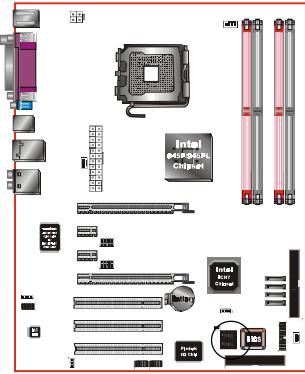
USB3/USB4: Four USB 2.0 ports

This mainboard includes additional USB2.0 ports, identified by 10-pin connector.

If you wish to use the additional USB ports, install the card-edge bracket to the system chassis then insert its cables to this 10-pin connector.



CAUTION !
If you purchased a separate USB cable make sure it has the same pin assignment. A different pin assignment may damage the system. If you need the USB cable, please contact our retailer.



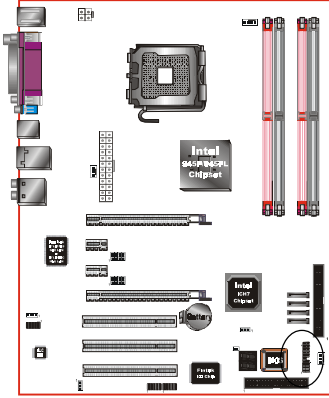
CP80P: Post Port Debug LED

Provides two-digit POST code to show why the system fail to boot. Allows quick and easy optimization.



Post Port Debug 7-segment LED display (Refer to Appendix B for POST codes)

Installation



CFP: Front Panel Connector

◆ HD_LED

This LED will light up whenever the hard drive is being accessed.

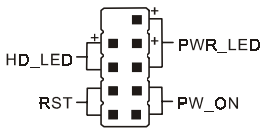
◆ PWR_LED

This connects to the power button of the system chassis

◆ RST

This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.

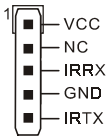
CFP



◆ PW_ON

This is connected to the power button on the case. To use the Soft-Off by PWR-BTTN feature, refer to the Power Management Setup in the BIOS setup section of this manual.

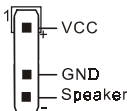
CIR



CIR: IR connector

Connect the IrDA cable (if available) to this IR connector.

CSPK



CSPK: Speaker

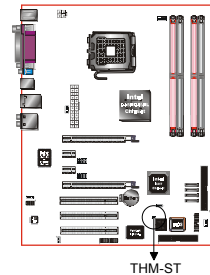
Connect to the system's speaker for beeping

3-6 Thermo Stick Function (Optional)

This mainboard is equipped with a digital thermometer capability to monitor any temperature. This is useful for measuring heat on peripherals such as VGA cards, hard disk drives, DIMMs or even on-board components such as chipset, MOSFETS, etc.

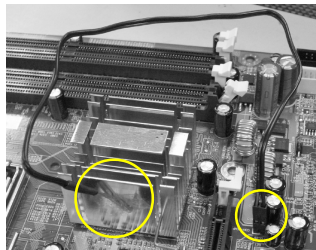
Thermo Stick consists of:

- 1) THM_ST header located on the mainboard
- 2) Thermostick sensor cable with heat-tolerant adhesive sticker optionally bundled in the mainboard package
- 3) Thunder Probe software utility



To setup Thermo Stick,

1. Insert the sensor cable to THM_ST header on the mainboard
2. Using the adhesive sticker, affix the sensor head of the cable to your desired point of measure. e.g. the chipset as in the picture below. Trim the adhesive sticker to a suitable size so that it will not affect the heat dissipation of any heatsink.




3. Ensure the cable is neatly tucked away from fans or other moving parts.
4. Install and run the Thunder Probe software. The temperature will be shown as below.



3-9 ACPI S3 (Suspend To RAM) Function

This mainboard supports the STR (Suspend To RAM) power management scheme by maintaining the appropriate power states in the RAM interface signals. The power source to the RAM is kept active during STR (ACPI S3). Advanced Configuration Power Interface (ACPI) provides many Energy Saving Features for operating systems that support Instant ON and QuickStart™ function.

1. To enable STR functionality to save system power :
 - a. Install ACPI certified add-on cards (such as VGA, LAN, and modem cards).
 - b. In BIOS, under Power Management Setup (refer to Section 4), select “ACPI Suspend Type: S3(STR)”. If you have a USB mouse or keyboard, set “USB Resume from S3/S4” to “Enabled”.
 - c. When in Windows, open the Control Panel Power Management application, and click the Advanced tab. In the Power buttons section, select “Stand By” from the drop-down lists.
2. To activate the STR function:
 - a. Click the START button and choose Shut Down.
 - b. In the Shut Down Windows dialog box, select the Stand By option to enter STR mode.


 The following are the differences between STR power saving mode and Suspend (Power On Suspend) mode:

- a. STR is the most advanced Power Management mode.
 - b. STR cuts all the power supplied to peripherals except to memory - max. power saving.
 - c. STR saves and keeps all on-screen data including any executed applications to RAM.
 - d. In STR mode, you must push the power button (connected to the onboard PW-On of CFP pin), click your USB mouse buttons, or press your USB keyboard keys to wake up your system to the last display.
-

3-9 ACPI S3 (Suspend To RAM) Function

This mainboard supports the STR (Suspend To RAM) power management scheme by maintaining the appropriate power states in the DDR SDRAM interface signals. The power source to the DDR SDRAM is kept active during STR (ACPI S3). Advanced Configuration Power Interface (ACPI) provides many Energy Saving Features for operating systems that support Instant ON and QuickStart™ function.

1. To enable STR functionality to save system power :
 - a. Install ACPI certified add-on cards (such as VGA, LAN, and modem cards).
 - b. In BIOS, under Power Management Setup (refer to Section 4), select “ACPI Suspend Type: S3(STR)”. If you have a USB mouse or keyboard, set “USB Resume from S3/S4” to “Enabled”.
 - c. When in Windows, open the Control Panel Power Management application, and click the Advanced tab. In the Power buttons section, select “Stand By” from the drop-down lists.
2. To activate the STR function:
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 - b. In the Shut Down Windows dialog box, select the Stand By option to enter STR mode.

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- a. STR is the most advanced Power Management mode.
 - b. STR cuts all the power supplied to peripherals except to memory - max. power saving.
 - c. STR saves and keeps all on-screen data including any executed applications to DDR SDRAM.
 - d. In STR mode, you must push the power button (connected to the onboard PW-On of CFP pin), click your USB mouse buttons, or press your USB keyboard keys to wake up your system to the last display.
-

Section 4

BIOS SETUP

Main Menu

The ROM BIOS contains a built-in Setup program which allows user to modify the basic system configuration and hardware parameters. The modified data is stored in a battery-backed CMOS, so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will stay unchanged unless there is a configuration change in the system, such as hard drive replacement or a device is added.

It is possible for the CMOS battery to fail causing CMOS data loss. If this happens you will need install a new CMOS battery and reconfigure your BIOS settings.



The BIOS setup screen and description are for reference only, and may not exactly match what you see on your screen. The contents of BIOS are subject to change without notice. Please visit our website for BIOS updates.

To enter the Setup Program :

Power on the computer and press the key during the POST (Power On Self Test). The BIOS CMOS SETUP UTILITY opens. (Figure 1)

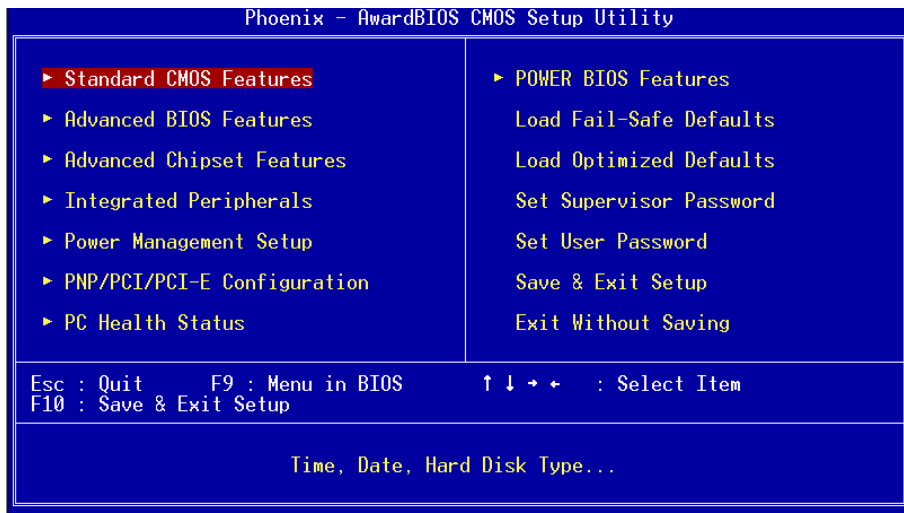


Figure 1: CMOS Setup Utility

BIOS

The main menu displays all the major selection items. Select the item you need to reconfigure. The selection is made by moving the cursor (press any direction (arrow key)) to the item and pressing the 'Enter' key. An on-line help message is displayed at the bottom of the screen as the cursor is moved to various items which provides a better understanding of each function. When a selection is made, the menu of the selected item will appear so that the user can modify associated configuration parameters.

4-1 Standard CMOS Setup

Choose "STANDARD CMOS FEATURES" in the CMOS SETUP UTILITY Menu (Figure 2). Standard CMOS Features Setup allows the user to configure system settings such as the current date and time, type of hard disk drive installed, floppy drive type, and display type. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (use direction keys to move the cursor and the <Enter> key to select), the entries in the field can be changed by pressing the <PgDn> or the <PgUp> key.

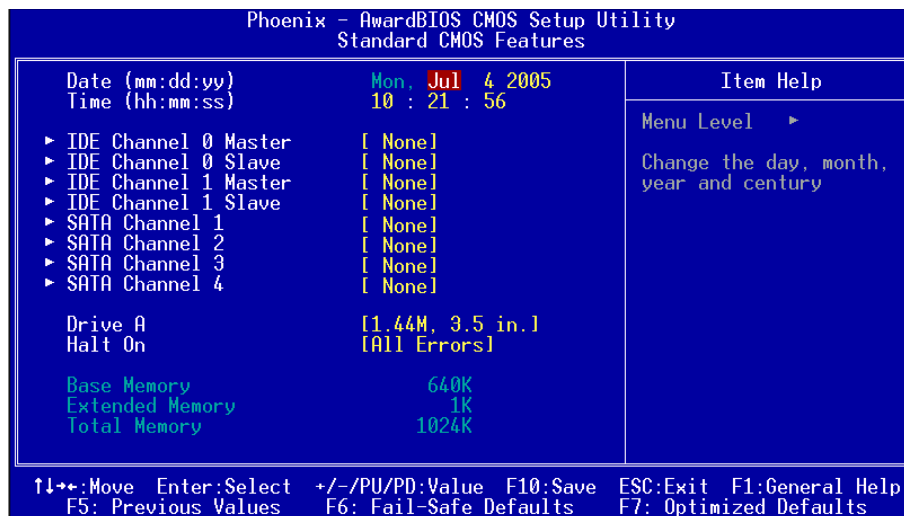


Figure 2: Standard CMOS Setup

Notes:

- If the hard disk Primary Master/Slave and Secondary Master/Slave are set to Auto, the hard disk size and model will be auto-detected.
- The "Halt On:" field is used to determine when the BIOS will halt the system if an error occurs.

4-2 Advanced BIOS Features

Selecting the “ADVANCED BIOS FEATURES” option in the CMOS SETUP UTILITY menu allows users to change system related parameters in the displayed menu. This menu shows all of the manufacturer’s default values for the board.

Pressing the [F1] key displays a help message for the selected item.

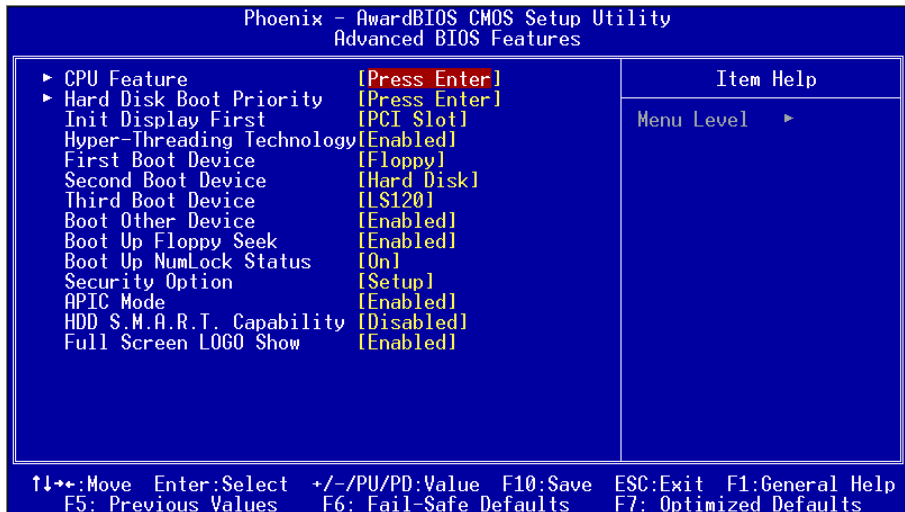


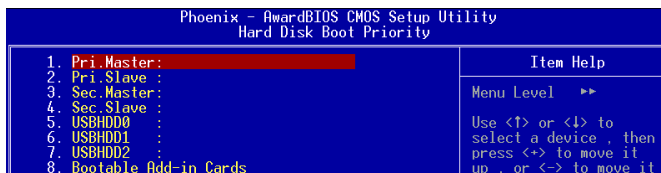
Figure 3: BIOS Features Setup

▶ CPU Feature

This field is available only for Pentium® CPU with Prescott core.

▶ Hard Disk Boot Priority

This item allows you to select the hard disk boot priority.



Init Display First

This item is used to select whether to initialize the PCI-E or PCI first when the system boots.

Options: PCI Slot, PCIEx.

BIOS

Hyper-Threading Technology

Enables the CPU Hyper-Threading Technology.

Options: Enables, Disabled.



It is recommend to enable Hyper-Threading Technology on system with Windows XP and Linux 2.4 and disabling it for legacy OS.

First /Second/Third/Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

Options: Floppy, LS120, Hard Disk, CDROM, ZIP100, USB-FDD, USB-CDROM, LAN, Disabled.

Boot Other Device

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the first, second, and third boot devices.

Options: Enabled, Disabled.

Boot Up Floppy Seek

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360K capacity.

Options: Enabled, Disabled.

Boot Up NumLock Status

This controls the state of the NumLock key when the system boots. The default is On.

On: The keypad acts as a 10-key pad.

Off: The keypad acts like cursor keys.

Security Option

This category allows you to limit access to the System and Setup, or just to Setup. The default is Setup.

System: The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup: The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

APIC Mode

This item allows you to enable APIC (Advanced Programmable Interrupt Controller)

functionality. APIC is an Intel chip that provides symmetric multiprocessing (SMP) for its Pentium systems.

Options: Enabled, Disabled.

HDD S.M.A.R.T. Capability

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance. S.M.A.R.T. Software resides on both the disk drive and the host computer. If a device failure is predicted, the host software, through the Client WORKS S.M.A.R.T applet, warns the user of the impending condition and advises appropriate action to protect the data.

Options: Enabled, Disabled.

Full Screen LOGO Show

This item allows you determine Full Screen LOGO display during POST.

Options: Enabled, Disabled.

4-3 Advanced Chipset Features

Choose the “ADVANCED CHIPSET FEATURES” option in the CMOS SETUP UTILITY menu to display following menu.

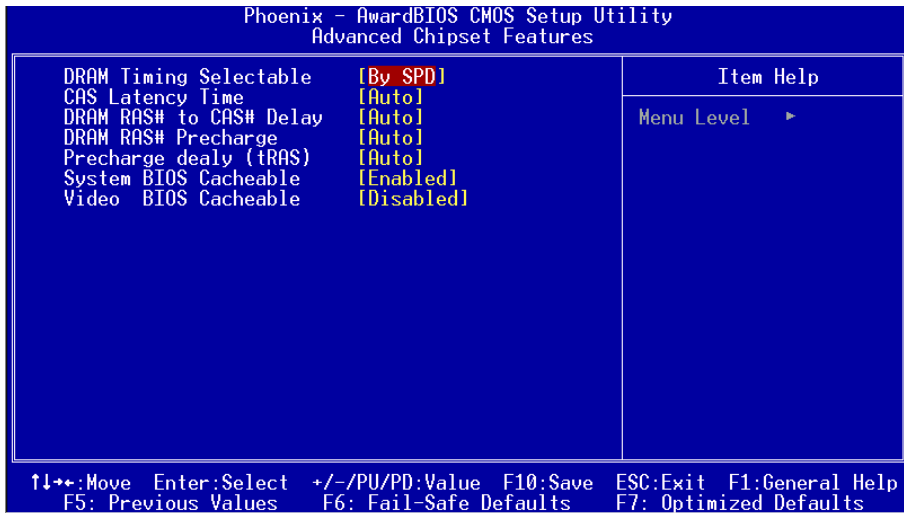


Figure 4: Chipset Features Setup

BIOS

DRAM Timing Selectable

For setting DRAM Timing, select By SPD to follow Intel PC DDR SDRAM Serial Presence Detect Specification.

Options: Manual, By SPD.

CAS Latency Time

This item specifies the number of clock cycles needed after a Column Address Strobe (CAS) signal before data can be read.

Options: 5, 4, 3, 6, Auto.

DRAM RAS# to CAS# Delay

This item sets the timing parameters for the system memory such as the CAS (Column Address Strobe) and RAS (Row Address Strobe).

Options: 2, 3, 4, 5, 6, Auto.

DRAM RAS# Precharge

This item refers to the number of cycles required to return data to its original location to close the bank or the number of cycles required to page memory before the next bank activate command can be issued.

Options: 2, 3, 4, 5, 6, Auto.

Precharge Delay (tRAS)

This item specifies the number of clock cycles needed after a bank active command before a precharge can occur (sets the minimum RAS pulse width.).

Options: Auto, 4 ~ 15.

System BIOS Cacheable

This item allows the system BIOS to be cached in memory for faster execution.

Options: Disabled, Enabled.

Video BIOS Cacheable

This item allows the video BIOS to be cached in memory for faster execution.

Options: Disabled, Enabled.

4-4 Integrated Peripherals

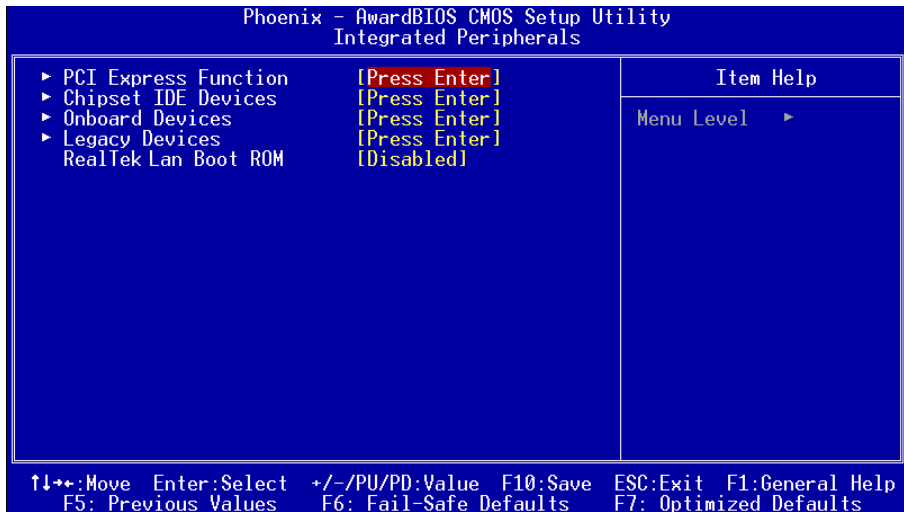


Figure 5: Integrated Peripherals

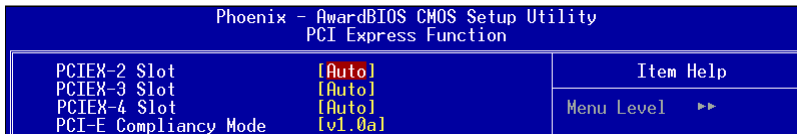
Realtek Lan Boot ROM

Enable/disable the onboard Realtek Lan Boot ROM for booting from LAN.

Options: Enabled, Disabled.

▶ PCI Express Function

Scroll to PCI Express Function and press <Enter>. The following screen appears:



PCIEX-2 Slot / PCIEX-3 Slot / PCIEX-4 Slot

PCI-E device disabled function.

Options: Auto, Enabled, Disabled.

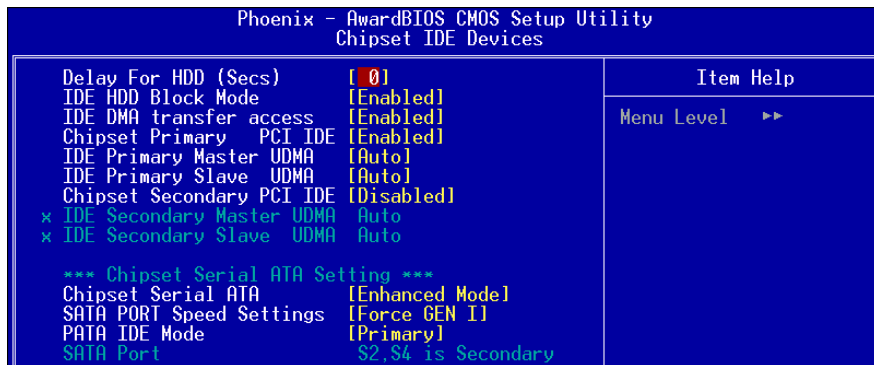
PCI-E Compliancy Mode

Allows you to select the PCI-E compliancy mode.

Options: V1.0a, V1.0.

► Chipset IDE Devices

Scroll to Chipset IDE Devices and press <Enter>. The following screen appears:



Delay For HDD (Secs)

This item allows you to set longer time stand by before system Scan HDD at post screen. Some HDD may need a longer stand by time before it can be detected.

Options: 0 ~ 15.

IDE HDD Block Mode

IDE Block Mode allows the controller to access blocks of sectors rather than a single sector at a time. The default is Enabled.

Options: Enabled, Disabled.

IDE DMA transfer access

Automatic data transfer between system memory and IDE device with minimum CPU intervention. This improves data throughput and frees CPU to perform other tasks.

Options: Enabled, Disabled.

Chipset Primary (Secondary) PCI IDE

The mainboard supports one channel of ordinary IDE interface. Select “Enabled” to activate each channel separately.



If you do not use the onboard IDE connector, set the Chipset Primary (Secondary) PCI IDE to “Disabled”.

IDE Primary/Secondary Master/Slave UDMA

Select the mode of operation for the IDE drive. Ultra DMA-33/66/100 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver. If your hard drive and your system software both

support Ultra DMA-33/66/100, select Auto to enable UDMA mode by BIOS.
Options: Auto, Disabled.

***** Chipest Serial ATA Setting *****

Chipest Serial ATA

This sets the mode of SATA. Combined mode will force SATA to replace one of the traditional IDE Primary or Secondary ports. Enhanced mode allows Serial ATA to work simultaneously with Parallel -ATA.

Options: Disabled, Auto, Combined Mode, Enhanced Mode, SATA Only.

SATA Port Speed Settings

This item allows you to select Serial ATA port speed.

Options: Force GEN I-->1.5Gbps, Force GEN II-->3.0Gbps.

PATA IDE Mode

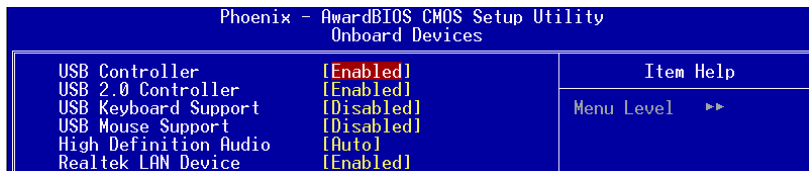
This option is available only when Chipset Serial ATA is in Combined mode.

Assigning “Primary” will make PATA IDE the Primary port and the remaining SATA as Secondary port. Similarly, assigning “Secondary” will make PATA IDE the Secondary port and SATA as Primary port.

Options: Primary, Secondary.

► **Onboard Devices Setup**

Scroll to Onboard Devices Setup and press <Enter>. The following screen appears:



USB Controller

Enables the USB controller.

Options: Disabled, Enabled.

USB 2.0 Controller

Enables the EHCI (USB2.0) controller.

Options: Disabled, Enabled.

BIOS

USB Keyboard Support

Enable/Disable support for USB keyboard under DOS.

Options: Auto, Enabled, Disabled.

USB Mouse Support

Enable/Disable support for USB mouse under DOS.

Options: Enabled, Disabled.

High Definition Audio (Intel® High Definition Audio Controller)

This item allows you disable the on-chip Audio.

Options: Auto, Disabled.

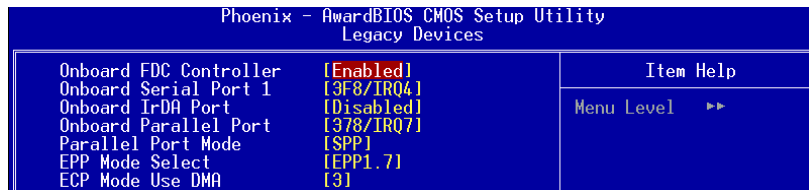
Realtek Lan Device

Onboard LAN device control function.

Options: Auto, Enabled, Disabled.

► Legacy Devices

Scroll to Legacy Devices and press <Enter>. The following screen appears:



Onboard FDC Controller

Select "Enabled" if you wish to use onboard floppy disk controller (FDC). If you install an external FDC or the system has no floppy drive, select "Disabled" in this field.

Options: Enabled, Disabled.

Onboard Serial Port 1

Select an address and corresponding interrupt for the first serial port.

Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

Infrared Port Select

Select an address and corresponding interrupt for the Infrared Port.

Options: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

Onboard Parallel Port

This field allows the user to configure the LPT port.

Options: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode

This field allows the user to select the parallel port mode.

Options: SPP, EPP, ECP, ECP+EPP.

EPP Mode Select

This field allows the user to select the EPP mode for parallel port mode.

Options: EPP1.9, EPP1.7.

ECP Mode USE DMA

This field allows the user to select DMA1 or DMA3 for the ECP mode.

Options: DMA1, DMA3.

4-5 Power Management Setup

Choose the “POWER MANAGEMENT SETUP” in the CMOS SETUP UTILITY to display the following screen. This menu allows the user to modify the power management parameters and IRQ signals. In general, these parameters should not be changed unless it’s absolutely necessary.

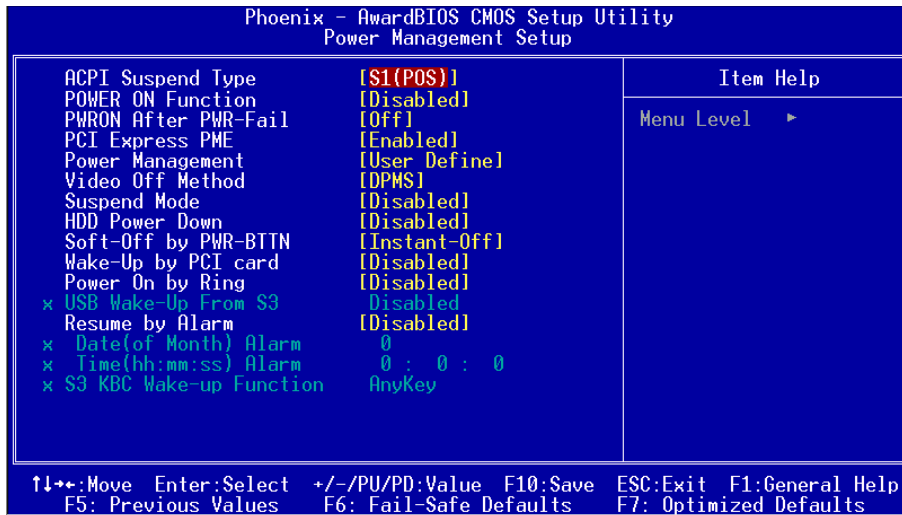


Figure 6: Power Management

ACPI Suspend Type

This item allows you to select S1(Power-On-Suspend) or S3(Suspend-To-RAM) function. When set to “S3(STR)” or “S1&S3” the following two fields become available.

Options: S1(POS), S3(STR), S1&S3.

POWER ON Function

Enables computer power on by the keypress activity.

Options: Disabled, Any key, Mouse, Both (Any key+Mouse).

PWRON After PWR-Fail

This item enables your computer to automatically restart or return to its last operating status after power returns from a power failure.

Off: The system stays off after a power failure.

Former-Sts: The system returns to the state it was in just prior to the power failure.

PCI Express PME

PCI-E device PME function.

Options: Enabled, Disabled.

Power Management

Use this to select your Power Management selection. The default is User define.

Max. saving: Maximum power savings. Inactivity period is 1 minute in each mode.

Min. saving: Minimum power savings. Inactivity period is 1 hour in each mode.

User define: Allows user to define PM Timers parameters to control power saving mode.

Video Off Method

This option allows you to select how the video will be disabled by the power management. The default is V/H Sync + Blank

V/H Sync + Blank: System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.

DPMS Support: Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.

Blank Screen: System only writes blanks to the video buffer.

Suspend Mode

Automatically, shuts off all devices except the CPU after a preset period of system inactivity.

Options: Disabled, 1, 2, 4, 6, 8, 10, 20, 30, 40 min and 1 hour.

HDD Power Down

Powers down the hard disk drive after a preset period of system inactivity.

Options: Disabled, 1 ~ 15 Min.

Soft-Off by PWR-BTTN

Use this to select your soft-off function. The default is Instant Off.

Instant Off: Turns off the system instantly.

Delay 4 Second : Turns off the system after a 4 second delay. If momentary press of button, the system will go into Suspend Mode. To wake the system, press the power button again.

BIOS

Wake-Up by PCI Card

An input signal from PME on the PCI card awakens the system from S3 suspend state.

Options: Enabled, Disabled.

Power On by Ring

When enabled, any modem activity awakens the system from soft-off state.

Options: Enabled, Disabled.

USB Wake-Up From S3

This item allows a USB device to wake-up the system from S3 suspend state.

Options: Enabled, Disabled.

Resume By Alarm

When set to Enable alarm resume, you can set the date (of month) and time (hh:mm:ss), that will awaken a system which has been powered down.

Options: Enabled, Disabled.

S3 KB Wake-up Function

This determines whether or not to enable keyboard/mouse activity to awaken the system from S3(STR) or S1&S3.

Options: Disabled, Any key, Mouse, Both (Any key+Mouse).

4-6 PNP/PCI/PCI-E Configuration

This page lets the user to modify the PCI/PCI-E IRQ signals when various PCI/PCI-E cards are inserted.

WARNING: Conflicting IRQ's may cause system unable to locate certain devices.

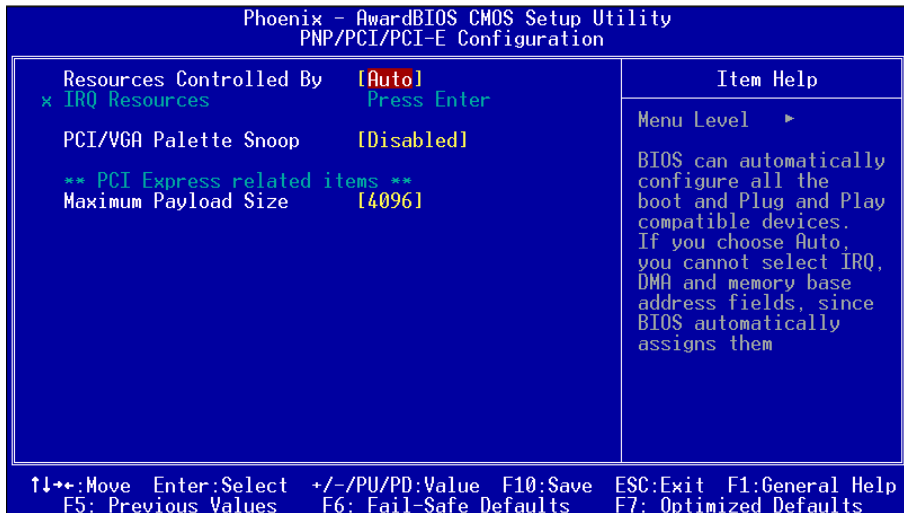


Figure 7: PNP/PCI Configuration Setup

Resources Controlled By

Determines what controls system PNP/PCI resources. The default is Auto (ESCD).

Manual: PNP Card's resources are controlled manually. The "IRQ Resources" field becomes available and you can set which IRQ-X and DMA-X are assigned to PCI and onboard devices.

Auto: BIOS assigns the interrupt resource automatically.

PCI/VGA Palette Snoop

This item is designed to overcome problems that may be caused by some nonstandard VGA cards.

Options: Enabled, Disabled.

*** PCI Express related items ***

Maximum Payload Size

Set maximum TLP payload size for the PCI Express devices. The unit is byte.

Options: 128, 256, 512, 1024, 2048, 4096.

Interrupt requests are shared as shown below:

	INT A	INT B	INT C	INT D	INT G
Audio	v				
PCI 1	v				
PCI 2		v			
PCI 3			v		
PCI-EXP1 (x16)	v				
PCI-EXP2 (x1)			v		
PCI-EXP3 (x1)		v			
PCI-EXP4 (x4)	v				
Onboard LAN					v
Onboard USB1	v				
Onboard USB2		v			
Onboard USB3			v		
Onboard USB4				v	
USB 2.0	v				

IMPORTANT!

When using PCI cards on shared IRQ slots, make sure its drivers support “Shared IRQ”, or that the cards do not need IRQ assignments. IRQ conflicts between the two PCI groups will make the system unstable or cards inoperable.

4-7 PC Health Status

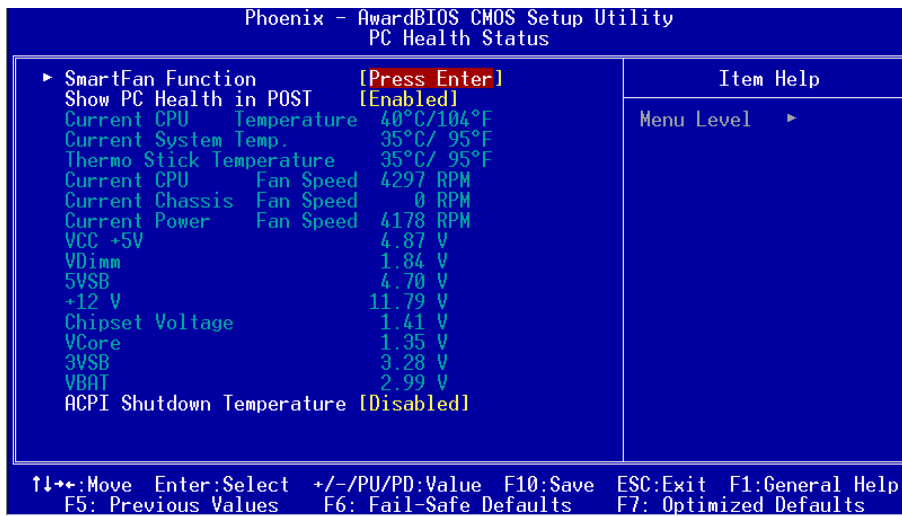


Figure 8: PC Health Status

Show PC Health in POST

When this function is enabled the PC Health information is displayed during the POST (Power On Self Test).

Options: Enabled, Disabled.

Current System/CPU Temperature

Displays the current system/CPU temperature.

Thermo Stick Temperature

Displays the current thermo Stick temperature.

Current CPU/Chassis/Power FAN Speed

Displays the current speed of the CPU, chassis, and power fan speed in RPMs.

VDimm

The voltage level of the DRAM.

Chipset Voltage

The voltage level of chipset.

Vcore

The voltage level of the CPU (Vcore).

+12V, VCC, 5VSB, 3VSB

The voltage level of the switching power supply.

VBAT

The voltage level of the battery.

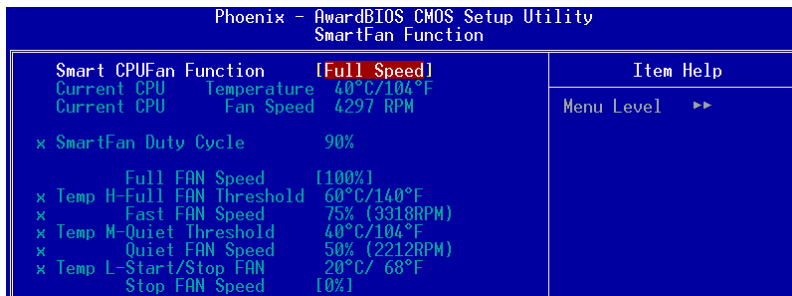
ACPI Shutdown Temperature

This is the temperature that the computer will turn off the power to combat the effects of an overheating system. (requires ACPI to be enabled in Power Management BIOS and ACPI compliant operating system.) The default is Disabled.

Options available are 60°C/140°F to 95°C/203°F in increments of 5°C.

► **SmartFan Function**

Scroll to SmartFan Function and press <Enter>. The following screen appears:



Smart CPU FAN Function

This item selects how the fan speed should be set. Full speed fixes fan speed at 100% duty cycle. Control the Fan by Duty-Cycle directly. By Temperature calculates the fan speed according to different temperature range.

To use By Temperature setting, refer to the example below to set the temperature and duty cycle.

Current CPU Temperature/Fan Speed

Display the current CPU Temperature/Fan speed.

Smart Fan example:

Temp	Setting	Result
Temp H (60 °C)	Full Fan Threshold	100% rpm - Full Fan duty
Temp MH (50 °C)	87% rpm	- Duty MH
Temp M (40 °C)	Quiet Threshold	75% rpm - Fast FAN Duty
Temp LM (30 °C)	62% rpm	- Duty LM
Temp L (20 °C)	Start/Stop Fan	50% rpm - Quiet FAN Duty
		0% rpm - Stop FAN Duty

- ◆ Only need to set the items in gray. The system will automatically calculate intermediate temperature Temp LM and Temp MH and the corresponding Duty LM and Duty MH.
- ◆ How effective Smart CPU Fan is will depend on fan design. Most fans have built-in thermistor and may self adjust its speed. Some fans have very limited duty cycle range open to fan control.
- ◆ For best results use the bundled Thunder Probe Software to tune your fan.

4-8 Power BIOS Features

This page lets you adjust various parameters to obtain improved performance for overclocking.

Warning:

Overclocking requires expert knowledge and risks permanent damage to system components. We recommend you leave these parameters at their default values for proper operation.

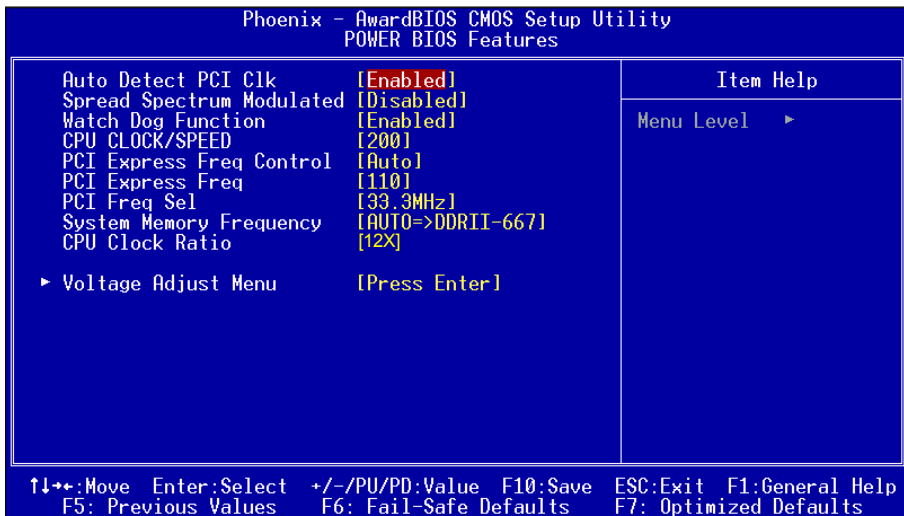


Figure 9: PowerBIOS Features

Auto Detect PCI Clk

When enabled the mainboard automatically disables the clock source for a PCI slot which does not have a module in it, reducing EMI (ElectroMagnetic Interference).

Options: Enabled, Disabled.

Spread Spectrum Modulated

If you enable spread spectrum, it can significantly reduce the EMI (ElectroMagnetic Interference) generated by the system.

Options: Enabled, Disabled.

Watch Dog Function

If you select “Enabled” and overclock fail before POST code 26h, the system will reset automatically by default configuration.

Options: Enabled, Disabled.

BIOS

CPU CLOCK/SPEED

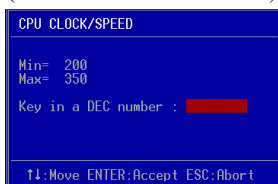
Enables you to increment the CPU's clock generator at 1MHz step. This works together with CPU Clock Ratio (below) to set the CPU operating frequency.

$$\text{CPU Clock Generator} \times \text{CPU Clock Ratio} = \text{CPU Frequency}$$

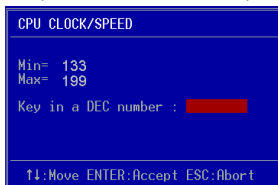
For example, if you have a processor that is rated at 2.4GHz and the clock generator is 200MHz, then $200\text{MHz} \times 12 = 2.4\text{GHz}$

Press <Enter> to display the following screen:

(When FSB is 800/1066MHz)



(When FSB is 533MHz)



Key in the DEC (decimal) number for the CPU CLOCK/SPEED.



Overclocking failure will cause no display on the monitor. To overcome this switch off the power supply and switch on again. Restart the system, press and hold <Insert> key. This will revert the BIOS to default or initial setting.

PCI Express Freq Control

Enables you to control the PCI Express Frequency.

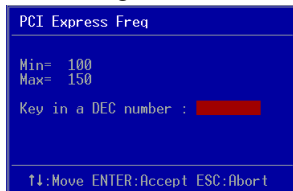
"Enabled" allows you to fine tune its frequency at 1MHz steps using the next selection item below. Selecting "Disabled" will lock the PCI-E frequency at 100MHz. "Auto" will increment the PCI-E frequency by a prefixed value according to FSB.

Options: Auto, Enabled, Disabled.

PCI Express Freq

Enables you to subtly tune the PCI Express frequency at increments of 1MHz step.

Press <Enter> to display the following screen:



Key in the DEC (decimal) number for the PCI Express subtle tuning.

PCI Freq Sel

Enables you to select the PCI Frequency.

Options: Sync., 37.5MHz, 40MHz, 33.3MHz.

System Memory Frequency

Enables you to select a ratio of the DDR2 DRAM to match the installed DRAM frequency. We recommend that you leave this item at the default value. Options available depend on system FSB.

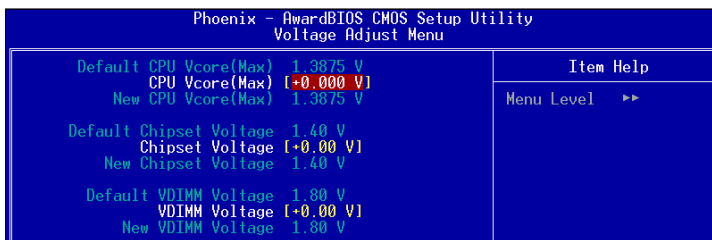
CPU Clock	CPU FSB	DDRII frequency options			
133MHz	533MHz	2:3 => DDRII-400	2:4 => DDRII-533	Auto => DDRII-667 (by SPD)	
200MHz	800MHz	1:1 => DDRII-400	3:4 => DDRII-533	3:5=>DDRII-667	Auto => DDRII-667 (by SPD)
266MHz	1066MHz	4:3 => DDRII-400	1:1 => DDRII-533	4:5=>DDRII-667	Auto => DDRII-667 (by SPD)

CPU Clock Ratio

Use this item to select a multiplier to set the CPU frequency. See CPU CLOCK/SPEED item above for explanation. If your CPU multiplier is locked this option will be unavailable.

► Voltage Adjust Menu

Scroll to Voltage Adjust Menu and press <Enter>. The following screen appears:



In the following items, “Default Voltage” indicates the original factory value, and “New Voltage” indicates the value that you assign.

CPU Vcore Voltage

This item allows you to adjust the CPU Vcore voltage.

Options: -0.200V to +0.575V in 0.025V increments. We recommend that you leave this at the default value.

BIOS

Chipset Voltage

This item allows you to adjust the Chipset voltage.

Options: -0.00V to +0.30V in 0.1V increments. We recommend that you leave this at the default value.

VDIMM Voltage

This item allows you to adjust the DIMM slot voltage.

Options: +0.00V, +0.05V, +0.10V, +0.15V, +0.22V, +0.27V, +0.32V, +0.37V.
We recommend that you leave this at the default value.

4-9 Defaults Menu

Selecting “Defaults” from the main menu shows you two options which are described below

Load Fail-Safe Defaults

When you press <Enter> on this item you get a confirmation dialog box:

Load Fail-Safe Defaults (Y/N)? N

Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.

Load Optimized Defaults

When you press <Enter> on this item you get a confirmation dialog box:

Load Optimized Defaults (Y/N)? N

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

4-10 Supervisor/User Password Setting

This function lets you set either Supervisor or User Password, or both, to prevent unauthorized changes to BIOS menus.

supervisor password: full rights to enter and change options of the setup menus.

user password: only enter but no rights to change options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to key in each time you enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You can determine when the password is required within the Advanced BIOS Features Menu and its Security option. If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4-11 Exiting BIOS

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing “Y” stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

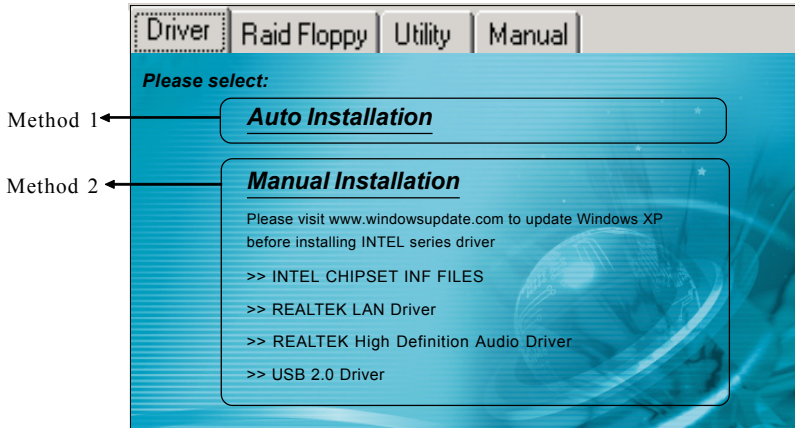
This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Section 5

DRIVER INSTALLATION

Easy Driver Installation

Once the operating system has been installed, you need to install the drivers for the mainboard.



Insert the bundled CD into the CD-ROM and the main menu screen will appear. The main menu displays links to the supported drivers, utilities and software.

► **Method 1**

This item installs all drivers automatically.

► **Method 2**

This item allows you to install the drivers selectively.

Step 1 : Click “**INTEL CHIPSET INF FILES**” to install chipset driver.

Step 2 : Click “**REALTEK LAN Driver**” to install LAN driver.

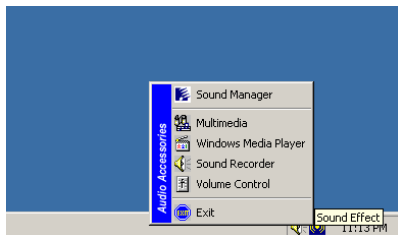
Step 3 : Click “**REALTEK High Definition Audio Driver**” to install audio driver.

Step 4 : Click “**USB 2.0 Driver**” to install USB 2.0 driver.

Realtek Sound Manager Quick User-guide

◆ Introduction

To obtain the best performance from your audio system, run the "Sound Manager" utility to adjust the settings to suit your needs. This section of the manual is intended to provide a quick user-guide to setup "Sound Manager". For more detailed information, refer to "Sound Manager manual" in the CD.



<Figure 1>

1. Right-click "Sound Effect" button on the task bar and select "Sound Manager".



Sound Effect :

<Figure 2>

2. Select "Sound Effect" page to set the desired audio environment from the pull-down menu.



Speaker Configuration:

<Figure 3>

3. This page displays the mainboards's phone jack function when a corresponding audio mode is selected.

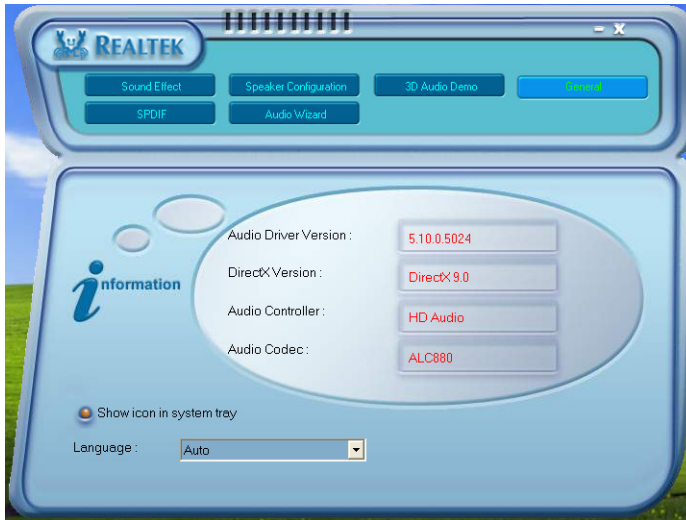
Figure 3 above shows the phone jack setup for 8 channel mode.



3D Audio Demo:

<Figure 4>

4. This page lets you test the 3D Positional Audio features.



General:

<Figure 5>

5. This page displays information regarding the audio hardware and software. To remove "Sound Manager" icon from Windows Task bar, uncheck "Show icon in system tray".



SPDIF:

<Figure 6>

6. This page shows S/PDIF-Out function on your system.
S/PDIF-Out: Choose the type of audio source that will appear on the S/PDIF-out connector.



Audio Wizard:

<Figure 7>

7. This mainboard is equipped with jack re-tasking feature for Front Panel audio. Simply plug Microphone/ Line-out into any front panel jack and it will work.
8. Figure 8 below shows the back panel audio. The Jack sensing capability will warn you if a wrong jack is plugged and will guide you to the right jack.



Audio Wizard:

<Figure 8>

Appendix A

A-1 Flashing the BIOS



Do NOT flash the system BIOS unless it is really necessary.

Updating and flashing the BIOS content risks BIOS data corruption which may cause system unable to power-on.

Download the xxxxx.EXE file corresponding to your model from our website to an empty directory on your hard disk or floppy. Run the downloaded xxxxx.EXE file and it will self extract. Copy these extracted files to a bootable floppy disk.

Note: The floppy disk should contain NO device drivers or other programs.

1. Type "A:\AWDFLASH and press <Enter> Key.
2. You will see the following setup screen.
3. Please key in the xxxxx.bin BIOS file name.

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxx -W83627-6A69LPA9C-0  DATE: 05/11/2000
Flash Type -
File Name to Program : _____

Error Message:
```

4. If you want to save the previous BIOS data to the diskette, please key in [Y], otherwise please key in [N].

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxx -W83627-6A69LPA9C-0  DATE: 05/11/2000
Flash Type - xxxxx E82802AB /3.3V
File Name to Program : xxxxx.bin

Error Message: Do You Want To Save Bios (Y/N)
```

Appendix

5. Key in File Name to save previous BIOS to file.

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxxx-W83627-6A69LPA9C-0   DATE: 05/11/2000
Flash Type - xxxxx E82802AB /3.3V

File Name to Program : xxxxx.bin
File Name to Save   : xxxxx.bin

Error Message:
```

6. To confirm and proceed, please key in [Y] to start the programming.

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxxx-W83627-6A69LPA9C-0   DATE: 05/11/2000
Flash Type - xxxxx E82802AB /3.3V

File Name to Program : xxxxx.bin
Checksum             : 9385H
File Name to Save   : xxxxx.bin

Error Message: Are you sure to program (y/n)
```

7. The BIOS update is finished.

```
FLASH MEMORY WRITER V7.88
(C)Award Software 2000 All Rights Reserved

For xxxx-W83627-6A69LPA9C-0   DATE: 05/11/2000
Flash Type - xxxxx E82802AB /3.3V

File Name to Program : xxxxx.bin
Checksum             : 4B04H
Verifying Flash Memory - 7FE00 OK

Write OK  No Update  Write Fail

F1: Reset      F10: Exit
```

8. Keep this BIOS floppy disk for future use.

Appendix B**B-1 POST CODES**

POST (hex)	DESCRIPTION
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: <ul style="list-style-type: none"> - Disable shadow RAM - Disable L2 cache (socket 7 or below) - Program basic chipset registers
C1h	Detect memory <ul style="list-style-type: none"> - Auto-detection of DRAM size, type and ECC. - Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
01h	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	<ol style="list-style-type: none"> 1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	<ol style="list-style-type: none"> 1. Clear 8042 interface 2. Initialize 8042 self-test
08h	<ol style="list-style-type: none"> 1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	<ol style="list-style-type: none"> 1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0B-0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved

Appendix

18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19-1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	<ol style="list-style-type: none">1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute.2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.3. Prepare BIOS resource map for PCI & PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.4. Onboard clock generator initialization. Disable respective clock resource to empty PCI & DIMM slots.5. Early PCI initialization: -Enumerate PCI bus number -Assign memory & I/O resource -Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24-26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	<ol style="list-style-type: none">1. Program CPU internal MTRR (P6 & PII) for 0-640K memory address.2. Initialize the APIC for Pentium class CPU.3. Program early chipset according to CMOS setup. Example: onboard IDE controller.4. Measure CPU speed.5. Invoke video BIOS.
2A-2Ch	Reserved
2Dh	<ol style="list-style-type: none">1. Initialize multi-language2. Put information on screen display, including Award title, CPU type, CPU speed
2E-32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34-3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved

43h	Test 8259 functionality.
44h	Reserved
45-46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	<ol style="list-style-type: none">1. Calculate total memory by testing the last double word of each 64K page.2. Program writes allocation for AMD K5 CPU.
4A-4Dh	Reserved
4Eh	<ol style="list-style-type: none">1. Program MTRR of M1 CPU2. Initialize L2 cache for P6 class CPU & program CPU with proper cacheable range.3. Initialize the APIC for P6 class CPU.4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53-54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	<ol style="list-style-type: none">1. Display PnP logo2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	<ol style="list-style-type: none">1. Initialize Init_Onboard_Super_IO switch.2. Initialize Init_Onboard_AUDIO switch.
5E-5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61-64h	Reserved
65h	Initialize PS/2 Mouse
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	<ol style="list-style-type: none">1. Assign resources to all ISA PnP devices.2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".

Appendix

6Eh	Reserved
6Fh	<ol style="list-style-type: none">1. Initialize floppy controller2. Set up floppy related fields in 40:hardware.
70-72h	Reserved
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM.....
76h	Reserved
77h	Detect serial ports & parallel ports.
78h-79h	Reserved
7Ah	Detect & install co-processor
7B-7Eh	Reserved
7Fh	<ol style="list-style-type: none">1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue:<ul style="list-style-type: none">◆ Clear EPA or customization logo.
80h-81h	Reserved
82h	<ol style="list-style-type: none">1. Call chipset power management hook.2. Recover the text fond used by EPA logo (not for full screen logo)3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices
85h	<ol style="list-style-type: none">1. USB final Initialization2. NET PC: Build SYSID structure3. Switch screen back to text mode4. Set up ACPI table at top of memory.5. Invoke ISA adapter ROMs6. Assign IRQs to PCI devices7. Initialize APM8. Clear noise of IRQs.
86-92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	<ol style="list-style-type: none">1. Enable L2 cache2. Program boot up speed3. Chipset final initialization.4. Power management final initialization5. Clear screen & display summary table6. Program K6 write allocation7. Program P6 class write combining
95h	<ol style="list-style-type: none">1. Program daylight saving2. Update keyboard LED & typematic rate
96h	<ol style="list-style-type: none">1. Build MP table2. Build & update ESCD3. Set CMOS century to 20h or 19h4. Load CMOS time into DOS timer tick5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h)